New Spot on Jupiter.

On April 10 I observed Jupiter in sunshine and noted the red spot central at 5h. 43m., longitude=30°·0. I soon remarked that the north equatorial belt curved abruptly north in the region north of the red spot and hollow, and that at the following end of this slanting attachment there was a very conspicuous dark spot which was quite new to me. It became central at 6h. 58m., longitude=75°·3, and seemed nearly as plain as the shadow of a satellite.

On April 12 the same region of Jupiter came under review. The red spot was central at 7h. 25m., longitude=31°·6, and the new north tropical spot at 8h. 33m., longitude=72°·7. The shadow of the first satellite was projected on the disc at the following end of the dark material forming the south tropical disturbance, and it appeared very little darker than the north tropical spot.

Observations were made on April 10 with 10-inch With-reflector, power about 220, and on April 12 with 12½-inch Calver-reflector, power 315.

During the present opposition of Jupiter the north equatorial and north temperate belts have been extremely faint, but the former recently developed a much deeper tone, and particularly in that section lying north of the red spot. The late outbreak of dark material in the north tropical zone will probably lead to the further intensification of the belts in this region.

It is hardly necessary to suggest that the new marking should be followed as critically and as long as possible during the short period remaining available for such observations before Jupiter's conjunction with the sun. Its rate of motion probably differs little from that of the red spot, and it may be looked for near the planet's central meridian on April 22 at 6h. 48m., April 24 at 8h. 26m., and April 29 at 7h. 37m. W. F. Denning.

Bristol, April 14.

Oscillation of Flame Cones.

Like Prof. Smithells, who endeavoured to explain the phenomena described in Mr. Temple's letter to Nature (March 29, p. 512), I have made many experiments with gas and air mixed by mechanical means and otherwise (Proc. Roy. Soc., vol. xxiv., and elsewhere), but am unable to agree with his conclusions in this case.

Assuming the mixture ascending the tube to contain 20 per cent. of gas by volume, and the relative densities of the air and gas to be as 1 to 0·5, then the *head* which produces the current is equal to a column of air 4·8 inches (0·4 foot) high, and, disregarding friction, the velocity= $\sqrt{2g\,0{\cdot}4}=5$ feet per second.

Again, assuming the average absolute temperature of the gases above the flame, when the latter has descended to a depth of 2 feet, to be 1500° F., and the corresponding temperature of the air entering the tube from below to be 520° F., the head becomes 18 inches (1·5 foot) and the velocity= $\sqrt{2g\,1{\cdot}5}=9{\cdot}8$ feet per second.

According to Mallard and Le Chatelier ("Annales des Mines," 8me Série, Tome iv., p. 326), the maximum velocity of translation of flame in a perfectly motionless mixture of lighting gas and air, contained in a glass tube of similar dimensions to that used by Mr. Temple, is 4 feet per second, but when the mixture is moving or agitated the velocity of translation increases, and may even assume the form of an explosive wave. The maximum velocity of 4 feet per second was obtained when the mixture contained 17·5 per cent. of gas, or, according to the authors, 2·5 per cent. more than is necessary for complete combustion.

Variations in the velocity of the current on the one hand, and of the flame on the other, appear to me to account for all the phenomena observed by Mr. Temple.

62 Park Place, Cardiff. W. Galloway.

Interpretation of Meteorological Records.

In the interesting discussion of the records of Lander and Smith's instruments at Canterbury (Nature, March 15) both Dr. Aitken (pp. 485, 534) and Mr. Omond (p. 512) appear to have overlooked the fact that *no rain fell*, but only snow to the depth of more than 1 inch. This snow was mixed with a little hail at the commencement of the storm, but no rain fell as assumed by both your correspondents. The records state that the 0·26 inch of rainfall consisted of *snow melted as it fell*. The first sign of the storm was distant thunder and a darkening of the sky in the north-west. The glycerin barometer commenced its usual sharp rise before the first hail arrived and the storm was directly overhead. It is a curious fact that the rain or snow with a thunderstorm occurs with the sharp barometric *rise*, and not with the *fall* as one might expect. I think the great fall in temperature was due to the snow, and not as described by your correspondents. The rainfall curve did not begin first as suggested by Dr. Aitken, but the barometer as explained above. It is another curious fact that, although my house is the highest here, and has my anemometer on top of 30 feet of iron tubing above roof, and wireless telegraphy aërial 80 feet above street (with which I was busy at time of storm), yet no damage was done; but within 100 yards much lower houses had chimneys and walls thrown down and roofs split, &c., and people were seriously injured. Many houses, windmills, and a church in the district were set on fire. A. Lander.

Canterbury.

Effect of Solar Eclipse on Fish.

During the partial solar eclipse observed in England on August 30, 1905, I was taking a holiday, and fishing in Slapton Ley (Devonshire). All the morning the sport had been indifferent, but as the eclipse neared its maximum the fish suddenly became ravenous, and I took more in that hour than all the rest of the day. My experience was also that of all the other boats out there at the time. The explanation, I presume, would be that the fish imagined night was approaching, and therefore prepared for supper; and as every fisherman knows, the last half-hour, when dusk is gathering, is the time that fish are mostly on the feed, and will readily take any bait.

A. Mosely.

Union Bank Buildings, Ely Place, London, E.C.,
April 10.

Sea-sickness and Equilibration of the Eyes.

In connection with the above subject (p. 511) it may perhaps interest your readers to know that German sailors recommend as a cure for sea-sickness to take a looking-glass and look steadily at your own eyes in it. Every motion of the ship is shared by the looking-glass, and consequently by so doing your own eyes follow the motion of the ship. Geoffrey Martin.

Edinburgh, April 13.

AN ETHNOLOGICAL SURVEY OF THE PHILIPPINES.[1]

With characteristic energy, the Americans have made a good beginning with the study of the multifarious natives of the Philippine Islands. Dr. A. E. Jenks, who is chief of the Ethnological Survey for the Philippine Islands, has recently published a substantial volume of 266 pages, and 154 plates, on the Bontoc Igorot, who live in the centre of the northern end of Luzon. Judging from the short account of their physical characters, they, like so many other peoples in the East Indian Archipelago, are a mixture of Indonesians and Proto-Malays; a few are distinctly narrow-headed, about three times as many are broad-headed, and somewhat less than two-thirds are intermediate. The average stature of the men is 5 feet 4⅛ inches; the women average nearly 7 inches shorter. There is no trace of Negrito blood. The settlement of Bontoc is divided into thirteen wards or political divisions, called *ato*; each has its separate governing council, which can declare war or make peace. Each *ato* contains three kinds of buildings:—(1) public edifices, *fawi* and *pabafunan*, for men and boys; (2) similar houses, *ola*, for girls and young women before their permanent marriage; and (3) private houses, *afong*, for families and widows. The *pabafunan* is the home of the various *ato* ceremonies, and is sacred to the male sex; it is the men's club by day and the unmarried men's dormitory; the *fawi* is the council house, and as such is frequented mainly by old men; it is also the skull-house. Dr. Jenks adds a note on the distribution of similar club-houses in Eastern Asia and in Oceania. The *olag* is the dormitory of the girls from the age of two years until they marry, and where they receive their lovers. The *afong* is the only primitive dwelling in the Philippines which is built on the ground, but it contains a small upper storey, and often an attic over this; these are used as store-rooms for cereals. The clothes, ornaments, tattooing utensils, weapons, and the like are described and figured. Of great interest are the accounts of the ordinary domestic operations, especially those connected with the cultivation of rice and the regulation of irrigation; the rules seem to be framed with common-sense, and the people appear to be sufficiently law-abiding. The hill-sides are elaborately terraced; the author doubts whether this art has been borrowed from the Chinese, and inclines to the view that it is indigenous to the East Indian Archipelago, having spread northwards to Japan. Various plants are cultivated, but rice is the most important vegetable product, and in consequence most of the religious ceremonies are in connection with this crop, and take place at stated occasions from seed-sowing to the close of the harvest. Also associated with the importance of rice in the social economy is the employment of *palay*, the unthreshed rice, as a medium of exchange, and a measure of exchange value, for articles bought and sold. *Palay* is at all times a good currency; it is always in demand, being the staple food; it keeps eight or ten years without deterioration; it is portable and infinitely divisible; it is of very stable value, and cannot be counterfeited. Certain villages have special commodities, which are made or produced in superfluity for purposes of barter, such as pots, cloths, salt, pigs. The Igorot has as clear a conception of the relative value of two things bartered as has the civilised man when he buys or sells with money; but whatever he trades, be it a five-cent block of Mayinit salt or seventy-dollar carabao (buffalo), the worth of the article is always calculated on the basis of its value in *palay*, even though the payment is in money. The standard of value of the *palay* currency is the handful—a small bunch of *palay* tied up immediately below the heads of grain; it is about 1 foot long, half head and half straw. On the whole, there is great uniformity in the size of the handful.

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[1] "The Bontoc Igorot." By Albert Ernest Jenks, Department of the Interior. Ethnological Survey Publications, vol. i. (Manila, 1905.)

"Negritos of Zamabales" By William Allan Reed. *Ibid.*, vol. ii., part i. (Manila, 1904.)

"The Nabaloi Dialect." By Otto Scheerer. *Ibid.*, vol. ii., parts ii., iii. (Manila, 1905.)

"The Bataks of Palawan." By Edward Y. Miller. (Bureau of Public Printing.)

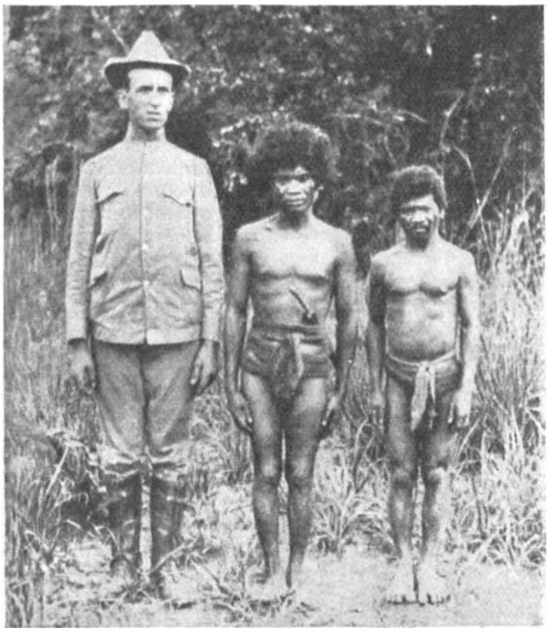

Fig. 1.—Relative Heights of American, Mixed Blood, and Pure Negrito.

The forces of nature are personified in the person of the only god known to the Igorot. He instituted the club-houses and gave rules of conduct, telling people not to lie or steal, and to have but one wife; the home should be kept pure, and all men dwell as brothers.

Enough has been said to show the importance of this work, which deals in a fairly thorough manner with a people about whom nothing was previously known, and who have lived their lives uncontaminated by foreign influence. Dr. Jenks candidly admits that the time at his disposal was insufficient to exhaust the subject, and we can only hope that the work so well begun will be thoroughly completed ere long. The Igorot community seems a very favourable one for an exhaustive sociological study. It would be very desirable for an investigator to make an exhaustive census of each *ato*, recording the whole genealogies of each family, according to the method introduced by Dr. Rivers; by this means accurate information could be obtained concerning the real nature of these wards, the reason for the social and family functions of certain individuals would be made clear, and the system of kinship and the regulation of marriage would be demonstrated.

On a previous occasion we have referred to the memoir on the Negritos of Zambales, by Mr. W. A. Reed, which contains a large number of excellent plates illustrating the general appearance and some of the occupations of these very interesting and primitive people. The Negritos were, without doubt, the aboriginal inhabitants of the Philippines, and they and their congeners in the Malay Peninsula, and in the Andamans, are the relics of one of the most archaic of human stocks. This can only be regarded

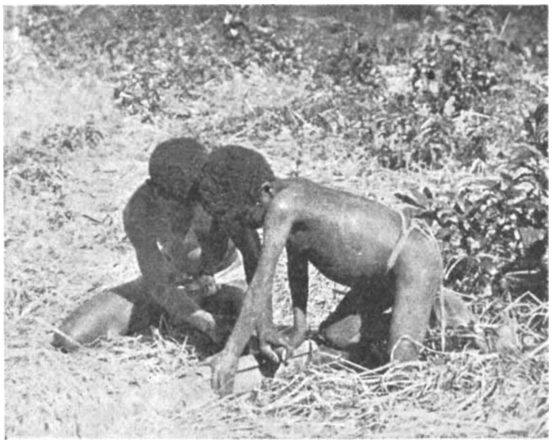

Fig. 2.—Negrito Men of Bataan making Fire with Bambo.

as a preliminary study, but, so far as it goes, it has considerable value and interest. The Aeta of Zambales are of a dark chocolate-brown colour, and when pure their hair is woolly; the men have an average height of 5 feet 2 inches; they are broad-headed, the cephalic index of the men averaging 82 and that of the females 80; their noses are exceedingly broad, but they have practically no prognathism. The Negritos studied by the author are not in the most primitive condition, as they have ceased to be purely nomadic hunters, and have taken to a little agriculture. It is to be hoped that Mr. Reed, or some other competent person, will pay especial attention to the real nature of the "scattered families" that wander from one place to another; to discover this it will be necessary to learn the names and relationships of every individual of each community, and this should be done for several communities, then we shall learn whether they are clans with mother-right or families with father-right. It is important to map out the hunting grounds, and to record whether they consist of personal property.

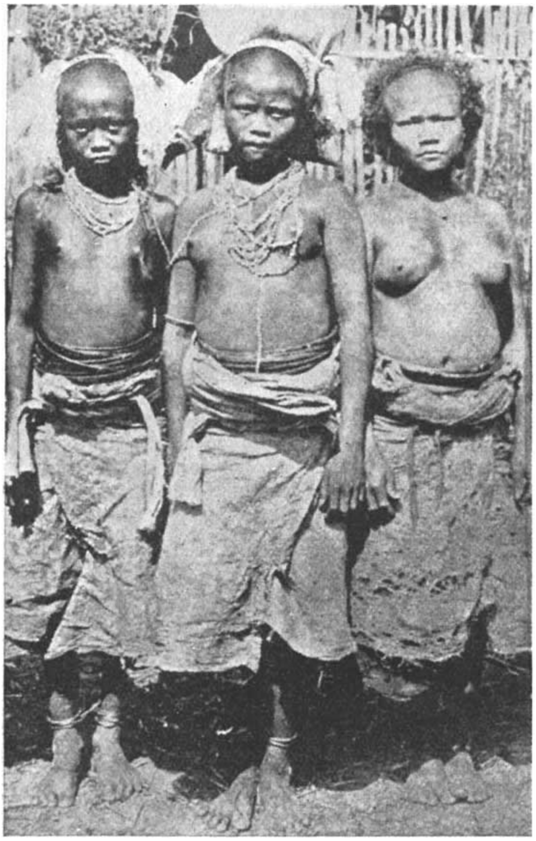

FIG. 3.—Group of Battak Women, showing Flayed-bark Skirts and Shaved Heads.

Despite the similarity of name, there is no reason to connect the Battak of Palawan with those of Sumatra. They are a wild, hunting folk, who cultivate one or two tuberous plants, and in a few places plant small fields of rice. They gather gums, which they carry to the coast and trade for rice, beads, &c. They wear a scanty garment of bark cloth. They are a mixed Negrito people, and appear to be analogous to the Sakai of the Malay Peninsula. The present paper is only a slight sketch; doubtless these interesting people will be carefully studied in the future. They, like the Negritos of Zambales and elsewhere, are worth special investigation, as they represent the first stage of the passage from a hunting to an agricultural mode of life. No people in this stage of culture has been at all adequately studied from the sociological point of view, and our American colleagues have here a fine opportunity for investigations that are much needed by ethnologists and sociologists.

The term Igorot (the form "Igorrote" is barbarous) is one of those names like Dyak, which has been used so loosely as to be worthless; etymologically it means mountaineer, and therefore can have no racial or even tribal significance. The grammatical study by Dr. Scheerer is concerned with that division of the Igorot who know themselves as Ibaloi and their language as Nabaloi. Contrary to popular opinion, the author can trace no Chinese influence among the people, but, on the other hand, he has found among Ibaloi personal names some that are pure Japanese words. At present it is impossible to say whether these are more than accidental similarities, or to determine in which direction the loan may have taken place. Nabaloi, like all Philippine dialects, is agglutinative, built up of roots and particles; it belongs to the great Oceanic linguistic stock.

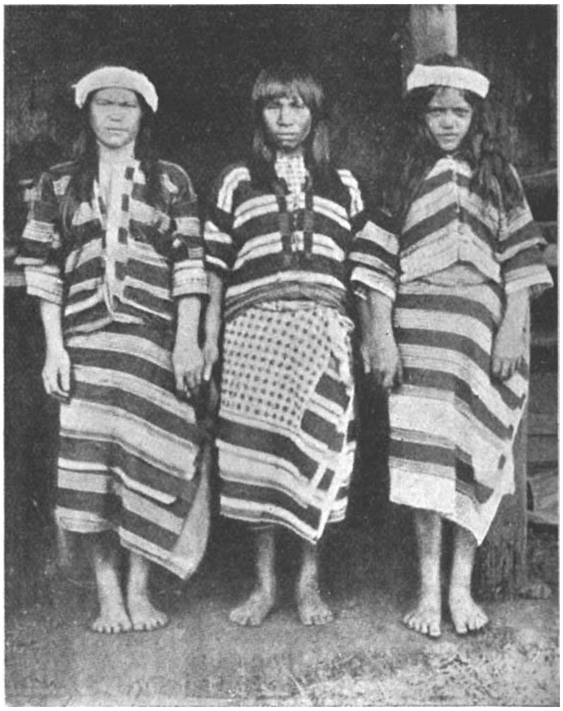

FIG. 4.—Ibaloi Women (Girl on Right Side).

A. C. HADDON.

THE OCEANOGRAPHY OF THE PACIFIC.

A NOTABLE addition to our knowledge of the Pacific Ocean is contained in a paper by Dr. James M. Flint, published as Bulletin No. 55 of the United States National Museum. In the early part of the year 1899 the U.S.S. *Nero*, a steam collier of nearly 5000 tons, which had been purchased for use during the Spanish-American war, was fitted out and dispatched from San Francisco with instructions to survey a route for a telegraph cable between the